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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/310,598	05/12/1999	K. DEREK SHAEFFER	STFD.005PA	9042

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CRAWFORD PLLC
1270 NORTHLAND DR.
SUITE 390
MENDOTA HIEGHT'S, MN 55120

EXAMINER
LUGO, DAVID B

ART UNIT	PAPER NUMBER
2634	

DATE MAILED: 12/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/310,598	SHAEFFER ET AL.	
	Examiner	Art Unit	
	David B. Lugo	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 October 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *08 October 2002* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The proposed drawing correction, filed on 10/8/02 has been approved.

Response to Arguments

2. Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-4 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berthoumieux et al. European Patent 0 447 302 (English translation) in view of Scott U.S. Patent 5,959,980.

5. Regarding claim 1, Berthoumieux et al. teach a mobile radio communication device having analog circuitry (transmitter-receiver component 2, channel selection component 3, analog/digital conversion component 5) and digital signal processing circuitry (processing unit 6) clocked sufficiently fast to generate noise, where the activity of the digital processing unit is reduced during transmission or receiving, as stated on lines 1-4 of page 3. Berthoumieux et al. further disclose means of detection 8 of the instants corresponding to transmission or receiving of radio signals in order to reduce the activity of the digital processing unit during these instants, as stated in the last sentence of page 3.

Berthoumieux et al. do not expressly state that the period during which the digital signal processing circuitry is shorter than the time during which the analog circuitry captures the information from the incoming data stream.

However, it is well known that the digital processing circuitry of a radio communications device can process data much faster than the analog circuitry can capture the incoming data. For example, Scott shows in Fig. 1, the frame structure of a typical TDD system where each time slot 103 comprises a base transmission 105, a user transmission 107, and a delay period 106. During the delay period, after the communications device has received the incoming message, it generates a responsive user transmission, which is received by the base station during time period 107 (see Scott in column 2, lines 25-35). The time during which the data is processed is the guard interval 106, and a graph of the guard time overhead as a percentage of the frame time is illustrated in Fig. 2, which shows that the guard time overhead is much less than the portion of actual data communication and reception. Hence, the time it takes for the data to be processed by a DSP, which occurs during this guard time, is less than the time necessary for the analog portion of the circuitry to capture the information.

Therefore, it would have been obvious to one of ordinary skill in the art to set the time control component 4 such that the period during which the data is processed by the DSP occurs during a shorter time interval than the period during which the incoming data stream is captured by the analog circuitry and the DSP is in a reduced activity mode in order to increase system efficiency by conserving time since the digital circuitry needs less time to process than the analog circuitry needs to capture the data.

6. Regarding claim 2, Berthoumieux et al. disclose means of detection 8 of the instants corresponding to the transmission and reception of radio signals so the activity of the digital processing unit can be reduced during these instants in order to minimize the disturbances resulting from the DSP operating while a signal is being transmitted or received (see second paragraph starting on page 3), and further teach that a separation is present between the instants of transmission and the instants of receiving as determined by the communication device (see final 3 lines of page 3 to page 4 line 9). Therefore, the DSP will operate during the instants when a signal is neither being received nor transmitted (i.e. during the guard times).

7. Regarding claim 3, Berthoumieux et al. disclose on lines 2-3 of the second paragraph starting on page 2, that signals received by the mobile station are generally low level, but do not expressly disclose that both the analog and digital circuitry are on the same chip.

However, it is well known to provide both the analog and digital portions of a circuit on the same chip. Therefore, it would have been obvious to one of ordinary skill in the art to provide both the analog and digital circuitry on the same chip in order to conserve space.

8. Regarding claim 4, Berthoumieux et al. disclose that signals received by the mobile station are low level, and further disclose that data is put in memory by the A/D converter 5 (see first paragraph starting on page 4).

9. Regarding claim 7, the first data-communication interval is considered to be substantially greater than the second data-communication interval (see rejection of claim 1 above).

10. Regarding claim 8, it is inherent that the data written to the memory is asynchronous to the rate at which data is read from memory due to the differing operating speeds of the digital and analog components.

11. Regarding claims 9 and 10, it is inherent that the memory can be read from/written to by the analog circuitry and can be written to/read from by the digital circuitry since the device is a radio communications device that both receives and transmits data.

12. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berthoumieux et al. and Scott as applied above, and further in view of Krasner U.S. Patent 5,841,396.

13. Regarding claims 5 and 6, Berthoumieux et al. and Scott disclose a mobile radio communications device as described above, but do not expressly teach that power is reduced to the analog circuitry and that it is inhibited from storing data in the memory.

Krasner teaches a receiver comprising both analog circuitry (RF to IF Converter 42, ADC 44) and digital circuitry (DSP 32) where the power to the analog circuitry is reduced after data collection is complete (see column 7 lines 17-20).

It would have been obvious to one of ordinary skill in the art to employ the teaching of reducing the power to the analog circuitry after data collection, as disclosed by Krasner, in the mobile device of Berthoumieux et al. and Scott in order to prolong the life of the battery in the mobile unit. Further, one of ordinary skill in the art would recognize that the analog circuitry would be inhibited from performing any operations, including accessing memory, when it is off.

14. Claims 11-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berthoumieux et al. in view of Scott and Krasner.

15. Regarding claim 11, Berthoumieux et al. teach a mobile radio communication device having analog circuitry (transmitter-receiver component 2, channel selection component 3, analog/digital conversion component 5) and digital signal processing circuitry (processing unit 6) where the activity of the digital processing unit is reduced during transmission or receiving, as stated on lines 1-4 of page 3. Berthoumieux et al. further disclose means of detection 8 of the instants corresponding to transmission or receiving of radio signals in order to reduce the activity of the digital processing unit during these instants, as stated in the last sentence of page 3.

Berthoumieux et al. do not expressly state that the period during which the digital signal processing circuitry is shorter than the time during which the analog circuitry captures the information from the incoming data stream and that the analog circuitry is effectively disabled while the digital signal processing circuitry is operating.

However, it is well known that the digital processing circuitry of a radio communications device can process data much faster than the analog circuitry can capture the incoming data (see discussion regarding Scott reference in rejection of claim 1 above).

Therefore, it would have been obvious to one of ordinary skill in the art to set the time control component 4 such that the period during which the data is processed by the DSP occurs during a shorter time interval than the period during which the incoming data stream is captured by the analog circuitry in order to increase system efficiency by conserving time since the digital circuitry needs less time to process than the analog circuitry needs to capture the data.

Further, Krasner teaches a receiver comprising both analog circuitry and digital circuitry where the power to the analog circuitry is reduced after data collection is complete and the digital circuitry is operating (see column 7 lines 17-29).

It would have been obvious to one of ordinary skill in the art to employ the teaching of Krasner of reducing the power to the analog circuitry after data collection in the mobile device of Berthoumieux et al. and Scott in order to prolong the life of the battery in the mobile unit.

16. Regarding claim 12, Berthoumieux et al. do not expressly disclose that both the analog and digital circuitry are on a single chip.

However, it is well known to provide both the analog and digital portions of a circuit on the same chip. Therefore, it would have been obvious to one of ordinary skill in the art to provide both the analog and digital circuitry on the same chip in order to conserve space.

17. Regarding claim 13, Berthoumieux et al. disclose that data is put in memory by the A/D converter 5 while the digital processing unit is in a reduced activity mode (see first paragraph starting on page 4).

18. Regarding claims 14 and 15, including the memory to be part of or distinct from the analog circuitry is deemed a design consideration that fails to patentably distinguish over the prior art of record.

19. Regarding claim 16, Berthoumieux et al. disclose in the first two paragraphs on page 2 that high frequency RF signals received by the mobile station are generally low level.

20. Regarding claim 17, the analog circuitry of the mobile radio communications device comprises a transmitter-receiver component 2.

21. Regarding claims 18, 19 and 25, Berthoumieux et al. teach a mobile radio communication device having analog circuitry (transmitter-receiver component 2, channel selection component 3, analog/digital conversion component 5) and digital signal processing circuitry (processing unit 6) where the activity of the digital processing unit is reduced during transmission or receiving, as stated on lines 1-4 of page 3. Berthoumieux et al. further disclose means of detection 8 of the instants corresponding to transmission or receiving of radio signals in order to reduce the activity of the digital processing unit during these instants, as stated in the last sentence of page 3.

Berthoumieux et al. do not expressly state that the period during which the digital signal processing circuitry is shorter than the time during which the analog circuitry captures the information from the incoming data stream, the analog circuitry is effectively disabled while the digital signal processing circuitry is operating, and that both the analog and digital circuitry, including the means for disabling the processing of data, are on a single chip.

However, it is well known that the digital processing circuitry of a radio communications device can process data much faster than the analog circuitry can capture the incoming data (see discussion regarding Scott reference in rejection of claim 1 above).

Therefore, it would have been obvious to one of ordinary skill in the art to set the time control component 4 such that the period during which the data is processed by the DSP occurs during a shorter time interval than the period during which the incoming data stream is captured by the analog circuitry in order to increase system efficiency by conserving time since the digital circuitry needs less time to process than the analog circuitry needs to capture the data.

Further, Krasner teaches a receiver comprising both analog circuitry and digital circuitry where the power to the analog circuitry is reduced after data collection is complete (see column 7 lines 17-20).

It would have been obvious to one of ordinary skill in the art to employ the teachings of reducing the power to the analog circuitry after data collection in the mobile device of Berthoumieux et al. and Scott in order to prolong the life of the battery in the mobile unit.

Further, it is well known to provide both the analog and digital portions of a circuit on the same chip. Therefore, it would have been obvious to one of ordinary skill in the art to provide both the analog and digital circuitry on the same chip, including the means for disabling the processing of data, in order to conserve space.

22. Regarding claim 26, Scott shows in Fig. 2 that the percentage of a time period during which the analog circuitry operates (percent analog = 100% – percent guard time overhead) varies according to factors such as cell radius and signal propagation (round trip) time. Therefore, the limitation of processing data with the analog circuitry while the digital signal processing circuitry is in the reduced activity mode for at least ninety percent of a time period and processing data with the digital signal processing circuitry for no more than the remaining portion of the period is deemed a design consideration that fails to patentably distinguish over the prior art of record.

23. Regarding claims 20-22, it is inherent that both the digital signal processing circuitry and the analog circuitry are configured and arranged to receive and transmit data.

24. Regarding claims 23 and 24, Berthoumieux et al. teach a mobile radio communication device having analog circuitry (transmitter-receiver component 2, channel selection component

3, analog/digital conversion component 5) for processing and storing data and digital signal processing circuitry (processing unit 6) where the activity of the digital processing unit is reduced during transmission or receiving, as stated on lines 1-4 of page 3. Berthoumieux et al. further disclose means of detection 8 of the instants corresponding to transmission or receiving of radio signals in order to reduce the activity of the digital processing unit during these instants, as stated in the last sentence of page 3.

Berthoumieux et al. do not expressly state that the period during which the digital signal processing circuitry is shorter than the time during which the analog circuitry captures the information from the incoming data stream and that additional data in the streams of data presented to the analog circuitry are disregarded while the digital signal processing circuitry is operating.

However, it is well known that the digital processing circuitry of a radio communications device can process data much faster than the analog circuitry can capture the incoming data (see discussion regarding Scott reference in rejection of claim 1 above).

Therefore, it would have been obvious to one of ordinary skill in the art to set the time control component 4 such that the period during which the data is processed by the DSP occurs during a shorter time interval than the period during which the incoming data stream is captured by the analog circuitry in order to increase system efficiency by conserving time since the digital circuitry needs less time to process than the analog circuitry needs to capture the data.

Further, Krasner teaches a receiver comprising both analog circuitry and digital circuitry where the power to the analog circuitry is reduced after data collection is complete (see column 7 lines 17-20).

It would have been obvious to one of ordinary skill in the art to employ the teachings of reducing the power to the analog circuitry after data collection in the mobile device of Berthoumieux et al. and Scott in order to prolong the life of the battery in the mobile unit. One of ordinary skill in the art would recognize that any data presented to the analog circuitry during the period when it is powered down would be disregarded.

25. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berthoumieux et al. in view of Krasner.

26. Regarding claim 27, Berthoumieux et al. teach a mobile radio communication device having analog circuitry (transmitter-receiver component 2, channel selection component 3, analog/digital conversion component 5) for processing and storing data and digital signal processing circuitry (processing unit 6) where the activity of the digital processing unit is reduced during transmission or receiving, as controlled by time control component 4 (see paragraph bridging pages 2-3). Berthoumieux et al. further disclose means of detection 8 of the instants corresponding to the transmission and reception of radio signals so the activity of the digital processing unit can be reduced during these instants in order to minimize the disturbances resulting from the DSP operating while a signal is being transmitted or received (see second paragraph starting on page 3), and further teach that a separation is present between the instants of transmission and the instants of receiving as determined by the communication device (see final 3 lines of page 3 to page 4 line 9). Therefore, the DSP will operate during the instants when a signal is neither being received nor transmitted (i.e. during the guard times).

Berthoumieux et al. do not expressly state that during the guard period while the digital signal processing circuitry processes data, the processing of data by the analog circuitry is effectively disabled.

Krasner teaches a receiver comprising both analog circuitry and digital circuitry where the power to the analog circuitry is reduced after data collection is complete and the digital circuitry is operating, thereby effectively disabling the analog circuitry from processing data (see column 7 lines 17-29).

It would have been obvious to one of ordinary skill in the art to employ the teaching of disabling the analog circuitry from processing data, as disclosed by Krasner, in the mobile device of Berthoumieux et al. in order to prolong the life of the battery in the mobile unit.

27. Regarding claim 28, Berthoumieux et al. disclose lowering the speed of functioning of the clocks of the digital processing unit (see first paragraph starting on page 3).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David B. Lugo** whose telephone number is **(703) 305-0954**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Stephen Chin**, can be reached at **(703) 305-4714**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

David B. Lugo
Patent Examiner

12/26/02

STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600